

SURGICAL OBSERVATIONS IN THE TREATMENT  
OF THE DISEASES AND ACCIDENTS  
OF THE LIVER.<sup>1</sup>

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UNTIL within a recent period the liver and its annexa have appealed in vain for the help accorded to its neighbors in the abdominal cavity. Such aid has been restricted to the treatment of abscess and hydatids. The frequent occurrence of suppurative hepatitis in the tropics afforded opportunities for clinical study that led to the early recognition of indications for the prompt and early evacuation of cavities resulting from that disease. Thirty years ago, Budd, in his monograph "On Diseases of the Liver," expressed himself as follows: "From what I have seen and read of hepatic abscess, it seems to me that the proportion of recoveries has been just as great, or even greater, when the abscess has opened into the lung or the bowel, as when it has made its way through the side, and I can only explain the circumstance by the fact that, when an abscess has pointed at the side, it has seldom been allowed to open of itself. When the abscess is large, and has existed long, its walls are thick and unyielding, and it has, in consequence, still less disposition to close up. When an abscess of this kind opens of itself, either outwardly or into the intestine or lung, matter continues to be discharged, and the patient generally dies worn out by the protracted suppuration. When the abscess is opened by the knife, the same thing, of course, happens, and the patient dies the earlier for our meddling. In India now, it seems to be the common practice to thrust a long exploring needle into the liver, where the presence of an abscess is suspected; and now and then, perhaps, the disease

<sup>1</sup> Read before the New York Surgical Society, January 13, 1885.

may be cured in this way. A single abscess may be opened when it is of moderate size, and before its walls are too thick and firm to close together, and the cavity may be thus obliterated. But there are many objections to the practice that to me seem quite decisive against it. First, there is the danger of hæmorrhage, and of setting up fresh inflammation by the mechanical injury thus done to the liver. This danger may, perhaps, be small for a single puncture, but, if the abscess is deep seated, it may not be hit at the first thrust. Again, from the difficulty of distinguishing the different diseases of the liver, if the operation is commonly adopted, it must often be performed where there is no abscess at all. It will readily be imagined that much mischief may be done in this way. Often, too, there is more than one abscess. This was the case in thirteen of the twenty-nine cases recorded by Annesly, and in still larger proportion in the cases collected by Andral, and Louis, and myself. We can hardly hope to reach all the abscesses, and, unless we do, we cannot cure the patient. Then there is the danger, that has been before alluded to, of letting the matter escape into the peritonæum, and setting up peritonitis, that may be speedily fatal. An occasional instance of success will, I fear, be a poor set-off against the cases in which the operation has done mischief, or failed of doing good."

Such was the doctrine enunciated by a writer that was recognized as an authority in 1852. We shall see how the improvements in modern treatment have swept away most of these objections, although at the same time we are bound to give due consideration to opinions based upon the study of a large number of cases. That the sudden evacuation of such abscesses is apt to be followed by considerable hæmorrhage from the granulations that line their interior, we are well aware, but that it is apt to be of a serious character is extremely doubtful. At all events, it is probable that the benefit derived from such evacuation will outweigh the loss of blood. The character of the tissues in which such cavities are formed is opposed to their contraction, and the surrounding structures are very likely to resent interference by extension of inflammatory processes that may perpetuate the conditions already existing, or lead to the formation of suppurative foci in the neighborhood, or even

to necrotic processes of a serious character. Most of these conditions which are referred to as complicating incision or puncture will occur when a spontaneous opening forms. It is true that such an opening is usually minute, and permits a very gradual discharge of the contents, but without antiseptic appliances it would be impossible to keep such a cavity aseptic, and such a condition would cause bad local reactions, to say nothing of the danger of general infection. Then, again, to open through the abdominal or lower thoracic wall occupies a considerable period of time, during which the abscess itself is enlarging, and the patient himself becoming more exhausted. I think that, where we find a large number of small collections of pus scattered through the liver, with one large central abscess, the histories of such cases and the post mortem investigations go far to prove that the small collections are secondary to the large one, which would be an indication for early operation, and I certainly cannot see that the existence of other collections should contra-indicate an operation on an abscess that is fluctuant and approaching the surface. Of course, I am not referring to the multiple abscesses that are found in pyæmia.

A man entered the Presbyterian Hospital on the 20th of August, 1883, with a large, hard tumor, situated in the epigastric and right hypochondriac region. It was prominent in front, and over the center was a spot, two inches and a half in diameter, that was exceedingly tender, and the seat of obscure fluctuation. His general condition was bad. On the 22d the aspirator was used, and three ounces of pus were withdrawn. On the 25th the operation was repeated, and the same amount of pus was obtained. On the 27th he was very restless, sweat profusely, and complained of severe epigastric pain. September 2d he vomited a good deal of glairy mucus. On the 5th he had diarrhœa, and the excreta were mixed with blood and pus. The diarrhœa continued, and he died on the 12th, of gradual exhaustion. At the autopsy the principal lesions were found in the liver, although there were also found evidences of chronic diffuse nephritis. The liver was found to be the seat of multiple abscesses. The lower border of the right lobe was found adherent to the abdominal parietes. At this point was a large abscess which communicated with the commencement of the duodenum by a ragged opening, which was cut off from the

abdominal sac by adhesions of the parietal and visceral peritonæum. It is probable that these smaller abscesses were secondary to the large one, and that an early operation might have prolonged the man's life.

The dread of opening the abdominal cavity in an attempt to reach an abscess of the liver for a long time deterred medical men from operating; much time was lost in studying the physical signs that indicated the formation of adhesions. Then Graves made an advance in the right direction, practicing an incision over the most prominent part of the tumor down to the peritonæum, filling it with lint, and thus diminishing resistance and inviting a spontaneous discharge. At a later period Récamier advised opening the abscess, from without inward, by the successive applications of potassa fusa, a very slow and painful process. In 1842 Murray called attention to the advantages derived from the method by puncture, insisting upon the introduction of an ordinary-sized trocar and canula, leaving the latter in position until adhesions formed between the liver and abdominal wall; and that this does occur in the large majority of cases there can be no doubt. In fact, Jameson (*Lancet*, April 29, 1871) demonstrated such to be the fact in a case in which the patient died on the 4th day after the operation, and in which the parts were found adherent around the artificial opening for a breadth of one centimetre and a half.

With improved methods of treating such conditions, we are warranted in anticipating more favorable issues in the future. In 1883 Lawson Tait reported four cases of hepatotomy, in which the existence or non-existence of adhesions was not considered. Three of these were for cases of hydatid disease, and one was for a large abscess. In all of them incisions were made through the abdominal wall, exposing the cyst, which was then opened and attached to the margins of the external opening by suture. All of the patients recovered completely. The great advance made by the author of these operations was in attacking the disease by a systematic procedure, without regard to adhesions.

Conditions of the annexa of the liver calling for surgical interference are very various, but most commonly due to stenosis and occlusion of the biliary excretory ducts. Simple dilatation of the gall-bladder is associated with obliteration of the folds

that are characteristic of its lining membrane and thinning of its walls. It may attain an enormous size, but generally maintains its natural form. It is not generally adherent to surrounding parts, and contains only more or less bile-stained mucus.

Empyema of the gall-bladder is not attended with change in form, but only in size. It may be free, or united to surrounding parts by firm fibrous adhesions; the walls have become friable and are easily lacerated. Recoveries from simple dilatation are common enough. The obstruction may cease to exist, especially if due to calculus in the common or cystic duct, and on the removal of this, the inflammatory processes in the gall-bladder speedily disappear. In other cases the disease progresses steadily, exposing the patient to the dangers of ulcerative perforation or rupture. Especially is this apt to happen in empyema due to gall-stones. In some cases it has been noticed that very marked changes occur in the size of the distended gall-bladder, due to calculi acting as ball-valves.

A patient with a well-marked and interesting case of this kind entered the Presbyterian Hospital June 28, 1880. She was a widow, forty-five years old, who first began to suffer from pain in her right hypochondrium four years before admission. Eighteen months before she began to have unusually severe paroxysms of pain that were preceded by chills and fever, and these attacks were repeated with intervals of eight or nine days. On admission, she was found to be deeply jaundiced, had white stools, and high-colored urine; complained of pain, pruritus, and occasional vomiting. There was marked tenderness over the epigastrium, the liver was enlarged, measuring six inches in vertical line; its free border could be felt free from any irregularities. The day after admission she had one of her attacks, beginning with a chill, followed by exaltation of temperature. She suffered from intense pain, and the gall-bladder could be felt distinctly below the free border of the ribs. After this the paroxysms occurred about once a week. It was observed that the gall-bladder became more and more dilated before and during the attacks, with increase of the jaundice to a bronze color, and that, on the subsidence of the pain, the size of the gall-bladder diminished, and the jaundice became lighter in color. It was thought that the obstruction was due to a calculus in the common duct; that, when this became dilated, it permitted the calculus to recede and the contents to escape; that, when the dilated duct emptied itself, it grasped the stone and closed the duct. After lingering until September 30th, she died from profuse diarrhœa and exhaustion.

The autopsy was made thirteen hours after death. The portal system was found distended with blood. There was no fluid in the cavity of the peritonæum. The stomach and duodenum were opened *in situ*. On the inner surface of the latter was a conical prominent projection, on the apex of which was the opening of the common duct. Pressure on the gall-bladder caused an escape of bile from this orifice. A probe passed through it entered a large ampulla, which, on further examination, was found to be the dilated duct continuous with a cavity in the substance of the liver itself, and probably caused by ulceration of the walls of the duct by the pressure of a calculus which had recently escaped into the intestine. The two ducts which unite to form the main hepatic duct were each distended by a calculus as large as a good-sized marble. There were several small abscesses in either lobe, and the left lobe was larger than the right. In this case all those conditions which it would have been possible to recognize during life would have warranted an operation, and yet the pathological lesions found after death would seem to prove that such a procedure would have done no good. The abscesses were, no doubt, secondary to the ulceration in the walls of the common duct.

The operation of cholecystotomy was first proposed by Jean Louis Petit (*Memoires de l'Académie de Chirurgie*, t. 1, p. 155); afterward, and independently, by Dr. Handfield Jones. It was first performed by Dr. Bobbs, June 15, 1867, then by Dr. Marion Sims, Ransohoff, and a number of European surgeons, and it may now be fairly said to be one of the recognized operations in surgery. But, from the nature of conditions that not infrequently complicate it, it must often fail. It will frequently happen that the calculi are inaccessible, hidden in recesses and diverticula that cannot be reached, and that such circumstances will render it impossible to complete an operation justified by all the symptoms that could be made out during life. The steps of the operation will be similar to those used in gastrostomy. The careful introduction of each interrupted suture through skin, parietal and visceral peritonæum, and incision immediately following fixation, has been followed by the best results. Circumstances might present themselves that would render it advisable to open the gall-bladder before attaching it to the abdominal wall. In attaching the walls of a cavity distended to its utmost, a faulty needle, with cutting edges, might easily penetrate through all

the tunics that enter into the composition of its walls, and permit a leakage sufficient to excite peritonitis of a fatal character. If such conditions should appear to warrant incision previous to suture, it would be proper to use Keen's scoop, or to empty and disinfect the cavity through the medium of an aspirator.

Ruptures of the liver, generally fatal, are more immediately concerned in the subject of this paper. Most frequently the result of severe accidents, they are attended with marked symptoms of collapse, sometimes with local conditions that may indicate the existence of abdominal hæmorrhage. More frequently the patient dies speedily, and in the majority of the cases that I have seen the lesions have been only suspected during life; but I think that in the future the diagnosis will be made during life by explorative operations.

Five years ago I saw a youth who had been thrown from a wagon a month before my visit. He came in violent collision with a lamp-post, but soon recovered from shock. His physician informed me that for several days there were no symptoms of serious mischief, but that, after the first week, there slowly developed tenderness and swelling in the right hypochondriac region. I found him with a much distended abdomen, dull on the right side and resonant on the left. The dullness on the right was continuous with the usual area of liver dullness and reached downward nearly to the iliac fossa. The swelling was fluctuant, and had been emptied more or less completely on several occasions by the physician in attendance, and on the day of my visit a large amount of apparently pure bile was removed by the aspirator. There were no symptoms of obstruction present, and it was the opinion of the physician that rupture had occurred, and that the bond of union had yielded slowly to the pressure of the ducts, forming an adventitious cyst. Subsequently, a large opening formed, which drained off large quantities of bile, and he succumbed at last to a drain upon his system. Unfortunately, the case is not complete. I saw him only once, and efforts to obtain an autopsy were of no avail.

The following case<sup>1</sup> of injury occurred in my service, and is of considerable interest in several respects;

Charles McHugh, twenty-nine years old, native of Ireland, was admitted to the Presbyterian Hospital, in the city of New York, July 3, 1883, service of Dr. Charles K. Briddon, with the following history:

<sup>1</sup> Reported by Dr. Charles G. Wagner, House Surgeon.

While under the influence of liquor, and attempting to work at his trade as a bricklayer, he lost his footing and fell from the third story to the cellar bottom, landing on a pile of bricks. When he was admitted to the hospital, he was in a condition of profound collapse, which lasted for some considerable time. As soon as he was able to respond to interrogations, it was ascertained that he was suffering from severe abdominal pain, concentrated principally in the right hypochondriac and lumbar regions, and in the right scapulo-humeral articulation. His condition was such at this time as to preclude any very exact physical exploration, but no crepitus could be made out in the neighborhood of the shoulder. His temperature was about normal, his pulse frequent and thready.

On the following day the signs of shock were still present. It was noticed that all the urine that he passed was bloody, the abdominal muscles were tense, and there was a manifest swelling between the cartilages of the ribs and the right iliac fossa, which region was exquisitely tender to the touch. Temperature  $103^{\circ}$ , pulse 120.

A week elapsed before the symptoms of shock had entirely passed, and during this time there was a gradual abatement of the local signs, the pain diminished, the abdomen became less tense, and there was an obscure fluctuation in the hypochondriac and anterior lumbar region. Urine still continued bloody.

*July 25.*—Three weeks after the injury was received, the blood had entirely disappeared from the urine. Patient complained of much difficulty in breathing and pain in the side; there was some diffused abdominal tenderness, but it was still principally concentrated in the right side. There was absolute dullness from the nipple line to a level with the anterior superior spinous process of the ilium, and below the free border of the ribs fluctuation was manifest. Believing that the collection of fluid originated in the kidney, and that it was confined by a capsule formed out of connective tissue, it was determined to explore it with a needle. The puncture was made a little below the free border of the eighth rib, and, on connecting with Dieulafoy's apparatus, sixty-nine ounces of fluid were removed. It had all the characteristics of pure bile. The chemical analysis and the microscopic appearances confirmed that opinion.

Patient was very much relieved by the operation. The difficulty of breathing and pain almost entirely disappeared, and his temperature dropped to nearly the normal. This condition was maintained until the evening of the following day, when the patient had a chill, which was followed by elevation of the temperature to  $103^{\circ}$ , pulse 136, respiration 36. In this short time the sac had refilled, the physical signs



were as before, and he complained much of the pain, and difficulty of breathing; his face was somewhat flushed, and there was a perceptibly yellowish tinge of the sclerotics. On the 27th, his symptoms were of such an urgent character as seemed to demand either aspiration or free incision, and the latter was determined upon. His condition did not appear to warrant the use of an anæsthetic. An incision one inch and a half long was made below the free borders of the eighth and ninth ribs, not being certain whether the fluid was contained within the dilated gall-bladder or an adventitious cyst. The dissection was carried carefully through the abdominal muscles until the cavity was reached. The peritonæum was not opened. A large gush of bile escaped, and seventy-five ounces were collected. As soon as the opening was made, the index-finger was introduced, and, wherever it could reach so as to come in contact with the walls, the cavity appeared to be lined with a perfectly smooth surface. No blood and no coagula escaped. Of course, the finger was too short to map out the confines of the space. After it was emptied, another attempt was made to explore with the finger, but it was found that the internal aperture was blocked by a solid mass that moved upward and downward with the movements of respiration. On passing the finger downward, it could be passed under this mass, which was made out to be the liver, which probably had been pushed up by the accumulation, and which had gravitated downward on its removal. A large drainage-tube was fixed in position, and a dressing of carbolized gauze.

The operation gave prompt relief, and it was, of course, more permanent in character than the aspiration. A free discharge of bile occurred, necessitating frequent changes in dressing. With occasional fluctuations as regards quantity, the discharge continued for several weeks. For the first few weeks it was apparently mere bile unmixed with other secretions. During this time the bowels were constipated, and the dejections were clay-colored, and on one or two occasions there was a slightly perceptible yellowish hue of the skin, but at no time amounting to jaundice, and there was not any marked emaciation.

On the 22d of August (during the absence of Dr. Briddon from the city) the patient accidentally removed the drainage-tube. A new one was introduced, and simple dressings to the opening, which only gave exit to a moderate amount of pus. On removing the dressing on the following day, the tube was missing, and could not be found. It was of the ordinary soft rubber, a quarter of an inch in diameter, and eight inches long. It was supposed to have disappeared into the cavity of the wound, and it is possible that it might have been drawn into it by the suction movement of inspiration. At all events, it could not be

found. After ineffectual efforts to recover it, the patient's temperature rose to 105°, where it remained for a few days and fell again to the normal.

On the return of Dr. Briddon, September 2d, a tupelo tent was introduced for the purpose of dilating the sinus so as to permit of a more thorough exploration of the part. The patient took this out without permission, stating that he could not tolerate the pain caused by its presence. He had another rise of temperature. In fact, it appeared that any interference with the interior of the cavity was resented by a ferbrile movement. The treatment at this time consisted in daily irrigations, variously medicated—at one time with boric acid, and subsequently with tincture of iodine.

About the middle of November, four months after the injury was received, patient began to have severe attacks of coughing, and there were some physical signs of a suspicious character to the right of the right border of the middle of the sternum. These signs were thought to indicate the existence of a cavity. The attacks of coughing were always brought on during the process of irrigation, and on several occasions when iodine was used the patient said that he could taste it in his mouth. It appeared probable that adhesions had formed between the lung and diaphragm on the one side, and that perforation of the latter had permitted the contents of the sinus to reach the lung itself. It was considered extremely doubtful whether any drainage-tube had receded into the wound. It was, however, deemed proper to endeavor to make a freer exit for the discharge of anything that might be found above the diaphragm. There was no collection of fluid in the cavity of the pleura at any time.

November 27 the patient was etherized, and the superficial portion of the sinus was gradually dilated, first with sounds, and then with the finger. It appeared to pass directly upward. Almost in contact with the inner surface of the ribs, at a distance of about three inches from the surface, the finger engaged in a narrow, constricted portion, and, on forcibly dilating this, passed into a larger cavity, apparently above the diaphragm. It was noticed at this time that there was some bloody froth in the mouth of the patient, and it was regarded as evidence that the opinion as to a probable communication between the original cavity and the tubular structure of the lung was correct. A very faithful search was made for the missing drainage-tube, with every conceivable form of forceps, and with wire snares passed through cut-off catheters, but without result, and it was considered scarcely possible that it could have escaped being found. Two large drainage-tubes were introduced side by side, and the wound was dressed as before. This operation

was followed by less reaction than was expected, and after a few days there was a manifest improvement in his condition. His cough entirely ceased, the discharge diminished in quantity; he gained flesh, and in about six weeks, though the discharge still continued, he asked and obtained his discharge.

He was again seen about the middle of May, 1884. He was in very good general health, and had been working at his trade without inconvenience, still wearing the tube, through which there was a little discharge.

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## REPORT OF CASES OF SURGICAL AFFECTIONS OF JOINTS TREATED WITH LISTERIAN ANTISEPTIC PRECAUTIONS.

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1. *Popliteal Abscess Communicating with the Knee-Joint.*
2. *Wound of Knee-Joint; Suppuration; Free Drainage.*
3. *Osteotomy for Badly United Fracture of Tibia and Fibula (Pott's Fracture).*
- 4 and 5. *Two Cases of Fractured Patella, Treated by Suture; Removal of Loose Fragment from Joint in one of the Cases.*

The following form a series of cases recently under my charge in the Radcliffe Infirmary, Oxford. The first is one of suppuration in the knee-joint, bursting into the popliteal space, in which position it was opened and drained by counter openings through the joint.

The second case is also of suppuration in the joint, caused by a wound of the synovial membrane. It was evidently septic when the joint was opened, and instead of syringing the cavity with the usual 1-20 solution of phenol, I used a solution